

```
#include <stdio.h>
```

```
void calculateTime(int n,int process[], int arrival[], int burst[], int completion[], int turn_around[],
int waiting[], int response[])
{
    int i,total_waiting = 0,total_turnaround = 0,total_response = 0,current_time = 0;

    for (i = 0; i < n; i++)
    {
        if (current_time > arrival[i])
        {
            completion[i] = current_time + burst[i];
        }
        else
        {
            completion[i] = arrival[i] + burst[i];
        }

        turn_around[i] = completion[i] - arrival[i];

        waiting[i] = turn_around[i] - burst[i];
        if (waiting[i] < 0)
        {
            waiting[i] = 0;
        }

        response[i] = waiting[i];

        current_time = completion[i];

        total_waiting += waiting[i];
        total_turnaround += turn_around[i];
        total_response += response[i];
    }

    float avg_waiting = (float)total_waiting / n;
    float avg_turnaround = (float)total_turnaround / n;
    float avg_response = (float)total_response / n;

    printf("\n+-----+-----+-----+-----+-----+\n");
    printf("| Process ID | Arrival Time | Burst Time | Completion Time | Turnaround Time | Waiting\n");
    printf("Time | Response Time |\n");
    printf("+-----+-----+-----+-----+-----+\n");
    for (i = 0; i < n; i++)
    {
        printf("| %10d | %12d |%11d | %15d | %14d |%13d |%14d |\n", process[i], arrival[i], burst[i],
completion[i], turn_around[i],
waiting[i], response[i]);
    }
}
```

```

    }
    printf("+-----+-----+-----+-----+-----+-----+-----+
+-----+\n");
    printf("\nAverage Turn Around Time = %.2f\n", avg_turnaround);
    printf("Average Waiting Time = %.2f\n", avg_waiting);
    printf("Average Response Time = %.2f\n", avg_response);
}

```

```

void sortDataByArrival(int n,int process[], int arrival[], int burst[])
{

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    for (int i = 0; i < n - 1; i++)
    {
        for (int j = 0; j < n - i - 1; j++)
        {
            if (arrival[j] > arrival[j + 1])
            {
                int temp_process = process[j];
                process[j] = process[j + 1];
                process[j + 1] = temp_process;

                int temp_arrival = arrival[j];
                arrival[j] = arrival[j + 1];
                arrival[j + 1] = temp_arrival;

                int temp_burst = burst[j];
                burst[j] = burst[j + 1];
                burst[j + 1] = temp_burst;
            }
        }
    }
}

```

```

int main()
{

```

```

    int n;
    printf("Number of Processes = ");
    scanf("%d", &n);

```

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    int process[n],arrival[n],burst[n],completion[n],turn_around[n],waiting[n],response[n];

```

```

    for (int i = 0; i < n; i++)
    {
        process[i]=i+1;
        printf("[Process %d][AT] - ",i+1);
        scanf("%d", &arrival[i]);
        printf("[Process %d][BT] - ",i+1);
        scanf("%d", &burst[i]);
    }

```

```

    sortDataByArrival(n,process,arrival,burst);
    calculateTime(n, process, arrival, burst, completion, turn_around, waiting, response);

```

```
    return 0;  
}
```

OUTPUT

```
ubuntu@administrator-hcl-desktop: ~/Desktop/gopikrishna  
administrator@administrator-hcl-desktop:~/Desktop/gopikrishna$ gcc fcfs-m.c  
administrator@administrator-hcl-desktop:~/Desktop/gopikrishna$ ./a.out  
Number of Processes = 5  
[Process 1][AT] - 1  
[Process 1][BT] - 2  
[Process 2][AT] - 2  
[Process 2][BT] - 4  
[Process 3][AT] - 2  
[Process 3][BT] - 3  
[Process 4][AT] - 4  
[Process 4][BT] - 2  
[Process 5][AT] - 0  
[Process 5][BT] - 5  


| Process ID | Arrival Time | Burst Time | Completion Time | Turnaround Time | Waiting Time | Response Time |
|------------|--------------|------------|-----------------|-----------------|--------------|---------------|
| 5          | 0            | 5          | 5               | 5               | 0            | 0             |
| 1          | 1            | 2          | 7               | 6               | 4            | 4             |
| 2          | 2            | 4          | 11              | 9               | 5            | 5             |
| 3          | 2            | 3          | 14              | 12              | 9            | 9             |
| 4          | 4            | 2          | 16              | 12              | 10           | 10            |

  
Average Turn Around Time = 8.80  
Average Waiting Time = 5.60  
Average Response Time = 5.60  
administrator@administrator-hcl-desktop:~/Desktop/gopikrishna$
```